

Heating and Cooling Equipment (Heat Pumps)

Covered Products

This category shall cover the following types of heat pumps:

- A) Air-source heat pumps
- B) Ground-source heat pumps
- C) Heat pump water heaters
- D) Variable refrigerant flow (VRF) systems

Definitions

Heat pump: Provides both heating and cooling. Heat pumps have an exterior unit that extracts thermal energy and transfers it to an interior unit for distribution throughout the home. The systems work in reverse to provide central air conditioning in summer.

Air-source heat pump (ASHP): A reversible heat pump which uses the outside air as a heat source when in heating mode, or as a heat sink when in cooling mode using the same vapor-compression refrigeration process and same external heat exchanger with a fan as used by air conditioners.

Ground-source heat pump (GSHP): Also referred to as a geothermal heat pump; a heat pump that transfers heat from the ground, taking advantage of the relative constancy of temperatures of the earth through seasons.

Heat pump water heater (HPWH): Also referred to as Hybrid Electric water heaters; uses electricity to move heat from one place to another instead of generating heat directly. Therefore, they can be two to three times more energy efficient than conventional electric resistance water heaters.

Packaged Terminal Heat Pumps (PTHP): A decentralized air-source heat pump that provides most of its heating and cooling using reverse cycle refrigeration.

Variable refrigerant flow (VRF) system: Typically, all-electric systems that use heat pumps to provide space heating and cooling to building spaces.

Global Warming Potential (GWP): A measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂).

Leak Management Plan: A plan put in place to minimize distribution system leakage.

Standard-Setting and Certification Programs

Various national and international standards apply to electronic appliances. They are defined here as a guide.

- **NYS Clean Heat Program** offers incentives for efficient electric heat pump systems that meet certain specifications.
- **PSEG Long Island Commercial Efficiency Program** offers incentives for efficient electric heat pump systems that meet certain specifications on Long Island and the Rockaways.
- **ENERGY STAR®** is a voluntary energy efficiency program sponsored by the U.S. Environmental Protection Agency. The ENERGY STAR® program makes identification of energy-efficient appliances easy by labeling products that deliver the same or better performance as comparable models while using less energy and saving money. For additional information on the ENERGY STAR® program, including product specifications and a list of qualifying products, visit the ENERGY STAR® website at <https://www.energystar.gov/>.
- **Northeast Energy Efficiency Partnerships (NEEP) Cold Climate Air-Source Heat Pump Specification (ccASHP Specification)** provides minimum requirements for program qualification of cold climate air-source heat pumps.
- **International Ground Source Heat Pump Association (IGSHPA)** is a non-profit, member-driven organization established in 1987 to advance ground source heat pump (GSHP) technology on local, state, national and international levels. IGSHPA provides standards for GSHP, including ANSI/CSA/IGSHPA C448 Series-16 Bi-National American-Canadian Standard (#21036). For additional information, including standards, visit the IGSHPA website at <https://igshpa.org/>.
- **Association of Energy Engineers (AEE) Certified Geoechange Designer (CGD)** recognizes professionals who have demonstrated high levels of experience, competence, proficiency, and ethical fitness in applying the principles and practices of geothermal heat pump design and related disciplines, as well as to raise the professional standards within the field, and to encourage those involved in the design process through a continuing education program of professional development. The CGD certification is granted by the Association of Energy Engineers and sponsored by the Geothermal Heat Pump Consortium® (GHPC).
- **New York State Department of Environmental Conservation (NYSDEC)** enforces the state's environmental laws and regulations. Its regulations are included in Title 6 of the New York Codes, Rules, and Regulations. For additional information, including regulations, visit the NYSDEC website at <https://www.dec.ny.gov/>.
- **National Ground Water Association Certified Vertical Closed-Loop Driller (CVCLD)** is a designation given to individuals that have demonstrated knowledge of the skills and competencies associated with constructing a loop well.
- **American Society of Heating, Refrigerating and Air-Conditioning (ASHRAE)** Standard 90.1 provides energy standards for buildings except low-rise residential buildings.
- **Energy Conservation Construction Code of New York State (ECCCNYS)** is a code that regulates minimum energy conservation requirements for new buildings. To view the ECCCNYS, visit the website at:

<https://dos.ny.gov/system/files/documents/2020/09/2020-ecccnys-november-2019.pdf>.

- **American National Standards Institute (ANSI)** is a nonprofit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States. The organization also coordinates U.S. standards with international standards so that American products can be used worldwide. ANSI facilitates the development of American National Standards by accrediting the procedures of standards-developing countries.
- **ANSI/ASHRAE/ACCA Standard 183-2007** establishes requirements for performing peak cooling and heating load calculations for buildings except low-rise residential buildings.
- **Air Conditioning, Heating, and Refrigeration Institute (AHRI)** provides standards and certifications of HVACR and water heating equipment within the global industry. For more information, including standards and certified products, visit the website at <https://ahrinet.org/>.
- **Occupational Safety and Health Administration (OSHA)** is an agency within the United States Department of Labor. OSHA's role is to assure safe and healthful working conditions by authorizing enforcement of the standards developed under the OSHA Act; assisting and encouraging the States in their efforts to assure safe and healthful working conditions; and providing for research, information, education, and training in the field of occupational safety and health.
- **Code of Federal Regulations (CFR)** includes energy conservation standards specified in [CFR 430.32\(c\)\(3\)](#).
- **Restriction of Hazardous Substances (RoHS) Directive** is a European Parliament and Council Directives restricting the use of certain hazardous substances in electrical and electronic equipment. For additional information on RoHS please visit <https://www.rohsguide.com/>.

Specifications

Please note, specifications are divided into air-source heat pumps (A), ground-source heat pumps (B), heat pump water heaters (C), and variable refrigerant flow (VRF) systems (D).

A. Air-Source Heat Pump Specifications

All air-source heat pumps shall meet the most up-to-date NEEP specifications.

- To view the NEEP specifications for air-source heat pumps, go to <https://neep.org/>.

B. Ground-Source Heat Pump Specifications

All ground-source heat pumps shall meet ENERGY STAR® specifications.

- For a list of ENERGY STAR®-Certified ground-source heat pumps, go to <https://www.energystar.gov/productfinder/product/certified-geothermal-heat-pumps/results>

In addition, all affected entities are encouraged to purchase ground-source heat pumps that are AHRI certified.

- AHRI recognizes highly efficient products that are proven to meet the applicable ENERGY STAR® specifications.

C. Heat Pump Water Heaters

All heat pump water heaters shall meet ENERGY STAR® specifications.

- For a list of ENERGY STAR®-Certified heat pump water heaters, go to <https://www.energystar.gov/productfinder/product/certified-water-heaters/results>

D. Variable Refrigerant Flow (VRF) Systems

Light commercial variable refrigerant flow multi-split systems rated below 240,000 Btu/hr shall meet ENERGY STAR® specifications.

- For a list of ENERGY STAR® specifications, go to <https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Version%204.0%20Light%20Commercial%20HVAC%20Final%20Draft%20Specification.pdf>

For systems with capacities greater than those covered by ENERGY STAR, program eligibility will be determined based on whether proposed heat pump efficiencies meet or exceed local energy code.

In addition, affected entities are encouraged to purchase VRF systems that are AHRI certified.

- AHRI recognizes highly efficient products that are proven to meet the applicable ENERGY STAR® specifications.

Overarching Specifications

RoHS Compliance:

- All fixtures shall be compliance with RoHS.
- All affected state entities are encouraged to purchase heat pumps that comply with the most up-to-date requirements of the European RoHS Directive for the restriction of certain hazardous substances in electronic equipment.
- Bidders responding to solicitations are encouraged to disclose whether the product(s) offered comply with RoHS.

Proper recycling of old heat pumps:

- Affected entities shall ensure proper recycling or disposal of old heat pumps or system(s) at end of life.

State and local energy codes for energy levels:

- New York State and some NYS municipalities have minimum efficiency requirements for heat pumps. All heat pumps shall meet all applicable energy codes and standards.
- In accordance with the New York State Energy Code, split-system and split-package heat pumps shall have a SEER rating of 14 or higher.

Miscellaneous:

- Affected entities are encouraged to assess and implement energy efficiency opportunities related to building envelope and HVAC distribution before, or in coordination with, installing a heat pump. These thermal efficiency upgrades can reduce the building load, allowing for installation of fewer and/or smaller heat pumps that use less energy to operate. This reduces both upfront capital cost and long-term operational cost.
- Affected entities shall, to the maximum extent practicable, prioritize the purchase of versions that use a lowest GWP refrigerant available when purchasing new equipment.
- All heat pumps for which the U.S. Environmental Protection Agency and the U.S. Department of Energy have developed energy efficiency standards for compliance with the ENERGY STAR® program shall be ENERGY STAR® labeled and meet or exceed the ENERGY STAR® efficiency standard for such heat pump. This standard meets the requirements of Energy Law, Article 5, Section 5-108a and Executive Order No. 111.

Recommended Items

Total cost of ownership analysis:

- Total cost of ownership analysis is recommended for all projects, and end of life costs (proper disposal and recycling) should be included in the analysis.

Miscellaneous:

- Affected entities are encouraged to purchase a heat pump that meets the requirements of New York State Clean Heat Program or PSEG Long Island's program to qualify for incentives. Although subject to change, these may be applicable to air-source heat pumps, ground-source heat pumps, and heat pump water heaters.
- Affected entities are encouraged to lead (the State) by example in electrification of its buildings using clean heating and cooling technologies.
- Affected entities are encouraged to check with their utility for guidance and any incentives that may apply to heat pump projects, when using participating contractors which are subject to change. Possible sources include:

- The New York Electric Utilities¹ implemented [NYS Clean Heat Program](#):
 - Incentives are available through [NYS Clean Heat Participating Contractors](#) for heat pumps that meet requirements of the NYS Clean Heat Program.
- PSEG Long Island implemented heat pump programs:
 - Provides ASHP, GSHP and HPWH incentives (subject to change)
- Affected entities are encouraged, when applicable, to purchase heat pumps that are UL EcoLogo® certified.
- Affected entities are encouraged to consider “Smart Sequencing of Building Upgrades,” per guidance in the New Efficiency: NY White Paper and BuildSmart 2025.
 - “No later than 2020, all facilities with an annual utility bill greater than \$300,000 will conduct and execute building shell upgrades prior to implementing an HVAC replacement project and will evaluate the cost-effectiveness of an all-electric (heat pump) HVAC system. If the cost difference between a replace in kind (but more efficient than code) system type versus an electric heat-pump HVAC system is a 10-year or less simple payback (or has an IRR greater than 7%), then the building will switch to heat pump-based HVAC.”
- Affected entities are encouraged to refer to NYS Clean Heat program manuals and other NYSERDA and PSEG funding opportunities, all of which evolve over time.
- Affected entities are encouraged to have a leak management plan in place when operating their custom installed equipment.
- Affected entities are encouraged to ensure that all refrigerants are properly recovered at end of life and not released into the atmosphere.
- Affected entities are encouraged, when applicable, to refer to NEEP Air Source Heat Pump Installer and Consumer Resources for residential buildings.
 - To view these resources, go to <https://neep.org/high-performance-air-source-heat-pumps/air-source-heat-pump-installer-and-consumer-resources>.

Take-Back/Recycling

- When replacing equipment, affected entities are encouraged to work with the contractor during the purchasing process to evaluate available trade-in options, regardless of manufacturer. Contractors are required to offer programs that include take-back or trade-in, and proper environmental disposal of equipment (including equipment manufactured and sold by others).

¹ The New York Electric Utilities consist of Central Hudson Gas & Electric Corporation (“Central Hudson”), Consolidated Edison Company of New York, Inc. (“Con Edison”), Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”), New York State Electric & Gas Corporation (“NYSEG”), Orange and Rockland Utilities, Inc. (“Orange & Rockland”), and Rochester Gas and Electric Corporation (“RGE”) (collectively, “Electric Utilities”).

- State Agencies are reminded to follow State Finance Law § 167 regarding surplus property redistribution before utilizing take-back, recycling, or other options for the disposition of any units that are still in operable condition. This standard requires donation of usable equipment to other state agencies prior to declaration of equipment as surplus or waste.
- Affected entities are encouraged to provide details regarding existing equipment for take-back, including make and model of equipment being disposed, location of equipment (i.e., whether equipment is located in a basement; up one flight of stairs; fourth floor location with elevator access; or whether agency will move to dock) and any other pertinent information that will assist the contractor in determining disposal costs.
- If units are being transferred for disposition, a record of each disposition shall be retained by the affected entity. Documentation shall be provided to the affected entity demonstrating that these products have been disposed of in an environmentally sound manner in compliance with applicable local, state, and federal laws. The contractor or disposing party shall provide assurance to the affected entity that all exports of used equipment collected for reuse, recycling or disposal will be in compliance with the laws of the importing country.

Packaging

Packaging shall comply with Environmental Conservation Law section 37-0205.

Packaging shall not contain inks, dyes, pigments, adhesives, stabilizers, or any other additives to which any lead, cadmium, mercury, or hexavalent chromium is intentionally added or contain incidental concentrations of lead, cadmium, mercury, or hexavalent chromium which together are greater than 100 parts per million by weight (0.01%).

New York State encourages affected entities to adopt the following in order of preference when purchasing items that come in packaging:

- Items that do not need packaging, or the packaging is part of the product.
- Items that come in reusable packaging.
- Items that come in bulk packaging.
- Items that come in innovative packaging that reduces the amount of packaging.
- Items that come in packaging that remains the property of the supplier and does not become the property of the end user under any circumstance or condition. The vendor shall certify that the packaging material will be reused, recycled, or composted, and managed in compliance with applicable local, state, and federal laws.
- Items that come in packaging that maximizes recycled or biodegradable (compostable) content and/or meets or exceeds the minimum post-consumer content level for packaging in the U.S. Environmental Protection Agency Comprehensive Procurement Guidelines. Biodegradable products should only be used in areas where a composting facility exists that accept the material.

- Items that come in Packaging that is recyclable or biodegradable (compostable). Biodegradable products should only be used in areas where a composting facility exists and will accept the material.

Verification of Third-Party Certification and Compliance with this Specification

Affected entities should ask bidders or vendors to declare in the bid sheet or other appropriate documentation that the products they offer meet the requirements (and, if appropriate, encouragements) contained in this specification.